

(FILE 'HOME' ENTERED AT 17:44:11 ON 24 AUG 2001)

FILE 'USPATFULL' ENTERED AT 17:44:18 ON 24 AUG 2001

L1 577 S SERVER# NAME#  
L2 142 S SET# (P) L1  
L3 10811 S CLIENT# AND SERVER#  
L4 199512 S NETWORK  
L5 27 S TAG# AND L2  
L6 374 S SERVER CONFIGURATION FILE  
L7 82055 S FUNCTION# AND CONTEXT  
L8 474 S MEMBERSHIP# AND L3  
L9 9930 S L3 AND L4  
L10 25 S L5 AND L9  
L11 4 S L10 AND L6  
L12 5 S L10 AND L8

L11 ANSWER 1 OF 4 USPATFULL  
PI US 6185601 B1 20010206  
TI Dynamic load balancing of a **network** of **client** and  
**server** computers  
AB Methods for load rebalancing by **clients** in a **network**  
are disclosed. **Client** load rebalancing allows the  
**clients** to optimize throughput between themselves and the  
resources accessed by the nodes. A **network**, which implements  
this embodiment of the invention, can dynamically rebalance itself to  
optimize throughput by migrating **client** I/O requests from over  
utilized pathways to under utilized pathways. **Client** load  
rebalancing allows a **client** to re-map a path through a  
plurality of nodes to a resource. The re-mapping may take place in  
response to a redirection command from an overloaded node.

L11 ANSWER 2 OF 4 USPATFULL  
PI US 6101508 20000808  
TI Clustered file management for **network** resources  
AB Methods for operating a **network** as a clustered file system is  
disclosed. The methods involve **client** load rebalancing,  
distributed Input and Output (I/O) and resource load rebalancing.  
**Client** load rebalancing refers to the ability of a  
**client** enabled with processes in accordance with the current  
invention to remap a path through a plurality of nodes to a resource.  
Distributed I/O refers to the methods on the **network** which  
provide concurrent input/output through a plurality of nodes to  
resources. Resource rebalancing includes remapping of pathways between  
nodes, e.g. **servers**, and resources, e.g. volumes/file systems.  
The **network** includes **client** nodes, **server**  
nodes and resources. Each of the resources couples to at least two of  
the **server** nodes. The method for operating comprising the acts  
of: redirecting an I/O request for a resource from a first  
**server** node coupled to the resource to a second **server**  
node coupled to the resource; and splitting the I/O request at the  
second **server** node into an access portion and a data transfer  
portion and passing the access portion to a corresponding  
administrative  
**server** node for the resource, and completing at the second  
**server** nodes subsequent to receipt of an access grant from the  
corresponding administrative **server** node a data transfer for  
the resource. In an alternate embodiment of the invention the methods  
may additionally include the acts of: detecting a change in an  
availability of the **server** nodes; and rebalancing the  
**network** by applying a load balancing function to the  
**network** to re-assign each of the available resources to a  
corresponding available administrative **server** node responsive  
to the detecting act.

L11 ANSWER 3 OF 4 USPATFULL  
PI US 6067545 20000523  
TI Resource rebalancing in networked computer systems  
AB Methods for load balancing a **network** are disclosed. Resource  
rebalancing includes remapping of pathways between nodes, e.g.  
**servers**, and resources, e.g. volumes/file systems. Resource  
rebalancing allows the **network** to reconfigure itself as  
components come on-line/off-line, as components fail, and as components  
fail back. In an embodiment of the invention a method for load  
balancing

on a **network** is disclosed. The **network** includes **server** nodes and **resources**. Each of the **resources** is coupled to at least two of the **server** nodes. The method for load balancing comprises the acts of detecting a change in an availability of

the **server** nodes; defining a first set of available **server** nodes and a second set of available **resources** and selecting for each one of the members of the second set a corresponding member of the first set to **server** as the administrative **server** for handling an administrative portion of an I/O request for the corresponding resource of the second set. In an alternative embodiment of the invention the method for load balancing comprises the act of detecting a change in an availability of the **server** nodes; applying a load balancing function to the **network** responsive to at least two attributes of each of the **server** nodes and the **resources**, responsive to the detecting act and assigning based on a result of the load balancing function each of the **resources** to a corresponding available **server** node responsive to the applying act.

L11 ANSWER 4 OF 4 USPATFULL

PI US 6044367 20000328

TI Distributed I/O store

AB The current invention provides a method for improving throughput to or from a resource by allowing multiple **servers** to concurrently access the resource without affecting the integrity of the resource. Generally, by allowing one **server** to handle the administrative management of a resource, while allowing all **servers**, including the administrative **server**, to handle the actual passing of data associated with the I/O request, allows for increased bandwidth between **clients** and the resource. An I/O request to a first **server** node is converted into an access portion and a data transfer portion. The access portion is passed to a corresponding administrative **server** node for the resource. Subsequently, the administrative **server** may issue an access grant to the first **server** node. In response, the first **server** completes the data transfer for the resource.